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10/540,528	05/18/2006	Hisashi Maeshima	3273-0207PUS1	5366
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EXAMINER				
OJURONGBE, OLATUNDE S				
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1796				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

### Office Action Summary

**Application No.**

10/540,528

**Applicant(s)**

MAESHIMA, HISASHI

**Examiner**

OLATUNDE S. OJURONGBE

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 2, 4, 5 and 7-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3 and 6-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-856)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 20070426; 20060124; 20050624

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-2, 4-5 and 7-10, are drawn to a heat curable resin composition comprising an alicyclic epoxy compound (a) having a structure represented by the general formula (1).

Group II, claim(s) 3, 6, and 7-10, are drawn to a heat curable resin composition comprising an alicyclic epoxy compound (a') having a structure represented by the following general formula (2).

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

while the special technical feature of the invention is the structure of general formula (I), there is lack of unity a priori, since the structure of general formula (I) is not the applicant's contribution over prior art (see Barbe et al (EP 0736555)).

During a telephone conversation with Marc Weiner on 02/05/2009 a provisional election was made with traverse to prosecute the invention of Group (II), claims 3, and 6-10.

Affirmation of this election must be made by applicant in replying to this Office action.

Claims 1-2, 4-5 and 7-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Specification***

2. The use of the trademark, examples of which include EPOLEAD GT-401, on page 9 of the specification, has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3 and 6-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 further recites "...or a hydrocarbon group of a valence k having 1 to 20 carbon atom ...", it is unclear what limitation the applicant tries to set; while K electron shell is known in the art, valence k is an uncommon designation.

Claim 3 further recites "...at least one of R<sup>1</sup> and R<sup>2</sup> may represent a residue derived by removing any one of R<sup>1</sup> to R<sup>10</sup> from the structure represented by the following

general formula (1)...."; while the claim limitation "...comprising an alicyclic epoxy compound..." is met when at least one of R<sup>1</sup> and R<sup>2</sup> represent a residue derived by removing any one of R<sup>1</sup> to R<sup>10</sup> from the structure represented by the following general formula (1), this claim limitation is not met when at least one of R<sup>1</sup> and R<sup>2</sup> does not represent a residue derived by removing any one of R<sup>1</sup> to R<sup>10</sup> from the structure represented by the following general formula (1). This is indefinite, the claim to be a proper epoxy containing composition is required to have formula 1, not just that it "may" have it.

Dependent claims 6-10 are rejected for the same reason.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 3 and 6-10** are rejected under 35 U.S.C. 102(b) as being anticipated by **Yamamura et al (WO 01/95030)**.

Regarding **claims 3 and 6**, Yamamura et al teaches a resin composition comprising: (A) a cationically polymerizable organic compound, and (B) a cationic photoinitiator (page 4, lines 29-33). Yamamura et al further teaches examples of organic compound used as the component (A) to include epoxy compound (page 5, lines 10-21), examples of which include Celoxide 2081 (page 6, line 20).

Yamamura et al further teaches that the energy required for curing the composition of the invention is provided by light such as visible light, ultraviolet light and infrared light (page 25, lines 22-29). Yamamura et al further exemplifies the use of a laser beam of a laser power of 10 mW to form cure layers (page 53, lines 19-20). This inherently teaches a heat curable resin composition.

The examiner notes that apart from light, the energy source of Yamamura et al, exemplified as a laser beam of a laser power of 10 mW, also generates heat.

Claim 6 is rejected because the limitation on which it depends is optional.

Regarding **claim 7**, the cured layers of Yamamura et al meets the claim limitations (page 42, line 9).

Concerning the limitation, "...which is obtained by heat curing the heat-curable resin composition...", the examiner notes that this is a product-by-process limitation and that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

Moreover, the energy source of Yamamura et al generates heat as explained above

Regarding **claim 8**, the cured layer of Yamamura et al serves as the cured product of the instant claim; the examiner notes that the statement "...which is used for an adhesive or an encapsulant" is an intended use statement; statements in the preamble reciting the purpose or intended use of the claimed invention which do not result in a structural difference between the claimed invention and the prior art do not limit the claim and do not distinguish over the prior art apparatus.

Regarding **claims 9 and 10**, the examiner notes that the warping by shrinkage in curing of a composition is an inherent property of a composition, which depends on the components of the composition; the examiner further notes that products of identical chemical composition can not have mutually exclusive properties and a chemical composition and its properties are inseparable, therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present.

7. **Claims 3 and 6-10** are rejected under 35 U.S.C. 102(b) as being anticipated by **Nomiyama et al (WO 00/42115)**.

Regarding **claims 3 and 6**, Nomiyama et al teaches a curable resin composition comprising (A) a cationically polymerizable organic compound and (B) a cationic photopolymerization (abstract). Nomiyama et al further teaches that examples of the cationically polymerizable organic compound (A) of the invention include cyclic ether compounds such as an epoxy compound (page 3, lines 10-33) and examples of

commercially available products of the cationically polymerizable organic compounds of the invention include Celoxide 2081 (page 6, lines 8-15).

Nomiyama et al further teaches that the composition of the invention can be cured by the irradiation of ultraviolet rays, visible rays, or electron beams, example of which includes irradiation using a metal halide lamp at a dose of 10-2000 mJ/cm<sup>2</sup> (page 18, lines 3-14) and exemplifies a dose of 100 mJ/cm<sup>2</sup> (page 20, line 23). This inherently teaches a heat curable resin composition.

The examiner notes that apart from light, the irradiation source of Nomiyama et al, exemplified as having a dose of 100 mJ/cm<sup>2</sup>, also generates heat. Moreover, Nomiyama et al further exemplifies a method of preparing coating film that comprises allowing the substrate formed from the composition of the invention to stand in a thermo-hydrostat at a temperature of 80°C (page 20, lines 4-30).

Claim 6 is rejected because the limitation on which it depends is optional.

Regarding **claim 7**, Nomiyama et al further teaches cured products of the composition of the invention (page 18, lines 15-27).

Concerning the limitation, "...which is obtained by heat curing the heat-curable resin composition...", the examiner notes that this is a product-by-process limitation and that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is



unpatentable even though the prior product was made by a different process.

Moreover, the irradiation source of Nomiyama et al generates heat as explained above, and Nomiyama et al further exemplifies the preparation of coating film that comprises allowing the substrate formed from the composition of the invention to stand in a thermo-hydrat at a temperature of 80°C.

Regarding **claim 8**, Nomiyama et al further teaches the cured composition of the invention as adhesive layer (page 18, lines 6-24).

Regarding **claims 9 and 10**, the examiner notes that the warping by shrinkage in curing of a composition is an inherent property of a composition, which depends on the components of the composition; the examiner further notes that products of identical chemical composition can not have mutually exclusive properties and a chemical composition and its properties are inseparable, therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present.

8. **Claims 3 and 6-10** are rejected under 35 U.S.C. 102(b) as being anticipated by **Fujiwa et al (US 5,378,736)**.

Regarding **claims 3 and 6**, Fujiwa et al teaches a composition which comprises an alicyclic compound and an epoxidized compound thereof represented respectively by formulae (I) and (II) (abstract). Fujiwa et al further teaches the composition of the

invention comprising the alicyclic compound of formula (II) and a photo-cationic polymerization initiator (col.14, lines 8-14). Fujiwa et al further teaches that the composition of the invention can be coated on a base material and cured by photo-curing during heating (col.20, lines 43-47) and exemplifies the epoxidized alicyclic compound as the structure of col.24, lines 1-10.

Claim 6 is rejected because the limitation on which it depends is optional.

Regarding **claim 7**, the cured composition of Fujiwa et al meets the claim limitation.

Regarding **claim 8**, though Fujiwa et al does not teach a cured product which is used for an adhesive or an encapsulant of the instant claim, the examiner notes that this is an intended use statement; statements in the preamble reciting the purpose or intended use of the claimed invention which do not result in a structural difference between the claimed invention and the prior art do not limit the claim and do not distinguish over the prior art apparatus.

Regarding **claims 9 and 10**, the examiner notes that the warping by shrinkage in curing of a composition is an inherent property of a composition which depends on the components of the composition, the examiner further notes that products of identical chemical composition can not have mutually exclusive properties and a chemical composition and its properties are inseparable, therefore, if the prior art teaches the

identical chemical structure, the properties applicant discloses and/or claims are necessarily present.

9. **Claims 3, and 6-10** are rejected under 35 U.S.C. 102(b) as being anticipated by **Barbe et al (EP 0736555)**.

Regarding **claims 3 and 6**, Barbe et al teaches a curable resin composition (abstract); said curable resin composition comprises (a) at least one epoxy compound having at least two cycloaliphatic epoxy groups (page 2, lines 32-35), examples of which include celloxide 2081 (page 3, line 22 and page 11, Table 1). Barbe et al further teaches the composition of the invention comprising (c) at least one cationic polymerization photoinitiator (page 2, lines 34-35). Barbe et al further exemplifies coating compositions of the invention on plates, followed by being cured by irradiation with a high-pressure mercury lamp in air (page 10, lines 50-52). This inherently teaches a heat curable resin composition, as the high-pressure mercury lamp of Barbe et al, apart from producing light, also produces heat.

Claim 6 is rejected because the limitation it depends on is optional.

Regarding **claim 7**, the cured coating composition of Barbe et al meets the claim limitation.

Concerning the limitation, "...which is obtained by heat curing the heat-curable resin composition...", the examiner notes that this is a product-by-process limitation and that even though product-by-process claims are limited by and defined by the process,

determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. Moreover, the high-pressure mercury lamp of Barbe et al generates heat as explained above.

Regarding **claim 8**, Barbe et al further teaches that the composition of the invention can be used as adhesive (page 2, lines 5-9).

Regarding **claims 9 and 10**, the examiner notes that the warping by shrinkage in curing of a composition is an inherent property of a composition which depends on the components of the composition, the examiner further notes that products of identical chemical composition can not have mutually exclusive properties and a chemical composition and its properties are inseparable, therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. **Claims 3, and 6-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujiwa et al (US 5,378,736)** in view of **Takai (JP 2002-338659, US 2003/0059618** is used for ease of citation).

Regarding **claims 3 and 6**, Fujiwa et al teaches a composition which comprises an alicyclic compound and an epoxidized compound thereof represented respectively by formulae (I) and (II) (abstract). Fujiwa et al further teaches the composition of the invention comprising the alicyclic compound of formula (II) and a photo-cationic polymerization initiator (col.14, lines 8-14). Fujiwa et al further teaches that the composition of the invention can be coated on a base material and cured by photo-curing during heating (col.20, lines 43-47) and exemplifies the epoxidized alicyclic compound as the structure of col.24, lines 1-10.

Fujiwa et al does not teach a heat-curable composition comprising a surfactant of the instant claim.

Takai teaches a curable composition containing an alicyclic epoxy compound (abstract); said composition further comprises a compound having an alicyclic epoxy group in the

molecule and having an ester linkage and/or epoxy compound (B), examples of which include the compound represented by the structure of 0102 [0100-0102].

Takai further teaches the composition of the invention comprising lubricity-imparting agent for the purpose of improving lubricating property of a coating film obtained [0160].

Takai further teaches that the lubricity-imparting agents can be used alone or as a mixture and that of the lubricity-imparting agents, the silicone wax is excellent in a lubricity-imparting property before retort treatment after coating and curing are performed [0167] and further teaches examples of the silicone wax to include BYK-330.

Since the composition of the invention of Takai and Fujiwa et al are similar and both invention are in a similar field of endeavor - epoxy functional compositions, useful as coatings, furthermore, since the list of silicone wax taught by Takai et al is limited, motivated by the advantages taught by Takai, it would have been obvious for one of ordinary skill in the art to have incorporated any of the silicone wax of Takai, including BYK-330, into the composition of Fujiwa et al, by routine experimentation with an expectation of success.

The BYK-330 of modified Fujiwa et al serves as the surfactant of the instant claim.

Regarding **claim 7**, the cured composition of modified Fujiwa et al meets the claim limitation.

Regarding **claim 8**, though modified Fujiwa et al does not teach a cured product which is used for an adhesive or an encapsulant of the instant claim, the examiner notes that

this is an intended use statement; statements in the preamble reciting the purpose or intended use of the claimed invention which do not result in a structural difference between the claimed invention and the prior art do not limit the claim and do not distinguish over the prior art apparatus.

Regarding **claims 9 and 10**, the examiner notes that the warping by shrinkage in curing of a composition is an inherent property of a composition which depends on the components of the composition, since all the components of the composition of modified Fujiwa et al fall within the range of the components of the instant claim, the warping by shrinkage in curing property the applicant claims is exhibited by the composition of modified Fujiwa et al.

13. **Claims 3 and 6-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Barbe et al (EP 0736555)** in view of **Takai (JP 2002-338659, US 2003/0059618** is used for ease of citation).

Regarding **claims 3 and 6**, Barbe et al teaches a curable resin composition (abstract); said curable resin composition comprises (a) at least one epoxy compound having at least two cycloaliphatic epoxy groups (page 2, lines 32-35), examples of which include celloxide 2081 (page 3, line 22 and page 11, Table 1). Barbe et al further teaches the composition of the invention comprising (c) at least one cationic polymerization photo-initiator (page 2, lines 34-35). Barbe et al further exemplifies coating compositions of the invention, coated on plates, followed by being cured by irradiation with a high-pressure

mercury lamp in air (page 10, lines 50-52). This inherently teaches a heat curable resin composition, as the high-pressure mercury lamp of Barbe et al, apart from producing light, also produces heat.

Barbe et al does not teach the heat curable resin composition comprising a surfactant of the instant claim.

Takai teaches a curable composition containing an alicyclic epoxy compound (abstract); said composition further comprises a compound having an alicyclic epoxy group in the molecule and having an ester linkage and/or epoxy compound (B), examples of which include the compound represented by the structure of 0102 [0100-0102].

Takai further teaches the composition of the invention comprising lubricity-imparting agent for the purpose of improving lubricating property of a coating film obtained [0160].

Takai further teaches that the lubricity-imparting agents can be used alone or as a mixture and that of the lubricity-imparting agents, the silicone wax is excellent in a lubricity-imparting property before retort treatment after coating and curing are performed [0167] and further teaches examples of the silicone wax to include BYK-330.

Since the composition of the invention of Takai and Barbe et al are similar and both invention are in a similar field of endeavor - epoxy functional compositions, useful as adhesives, moreover, since the list of silicone wax taught by Takai et al is limited, motivated by the advantages taught by Takai et al, it would have been obvious for one of ordinary skill in the art to have incorporated any of the silicone wax of Takai, including BYK-330, into the composition of Barbe et al, by routine experimentation with an expectation of success.



The BYK-330 of modified Barbe et al serves as the surfactant of the instant claim.

Regarding **claim 7**, the cured coating composition of modified Barbe et al meets the claim limitation.

Concerning the limitation, "...which is obtained by heat curing the heat-curable resin composition...", the examiner notes that this is a product-by-process limitation and that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. Moreover, the high-pressure mercury lamp of modified Barbe et al generates heat as explained above.

Regarding **claim 8**, modified Barbe et al further teaches that the composition of the invention can be used as adhesive (page 2, lines 5-9).

Regarding **claims 9 and 10**, the examiner notes that the warping by shrinkage in curing of a composition is an inherent property of a composition which depends on the components of the composition, since all the components of the composition of the invention of modified Barbe et al fall within the components of the composition of the

instant claim, the composition of modified Barbe et al exhibits the warping shrinkage in curing property the applicant claims.

#### **International Search Report.**

15. The International Search Report (ISR) has been reviewed and the examiner finds the above references more relevant to the rejected claims than the X references (EP 1172393 and JP 2002-338659) on the ISR.

#### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLATUNDE S. OJURONGBE whose telephone number is (571)270-3876. The examiner can normally be reached on Monday-Thursday, 7.15am-4.45pm, EST time, Alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.S.O.

/Randy Gulakowski/  
Supervisory Patent Examiner, Art Unit 1796

